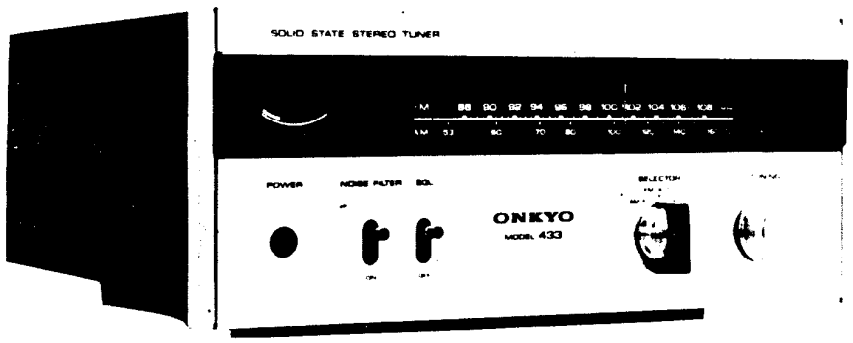
ONKYO®

SOLIDE STATE STEREO TUNER

SERVICE DATA



MODEL 433

SPECIFICATIONS

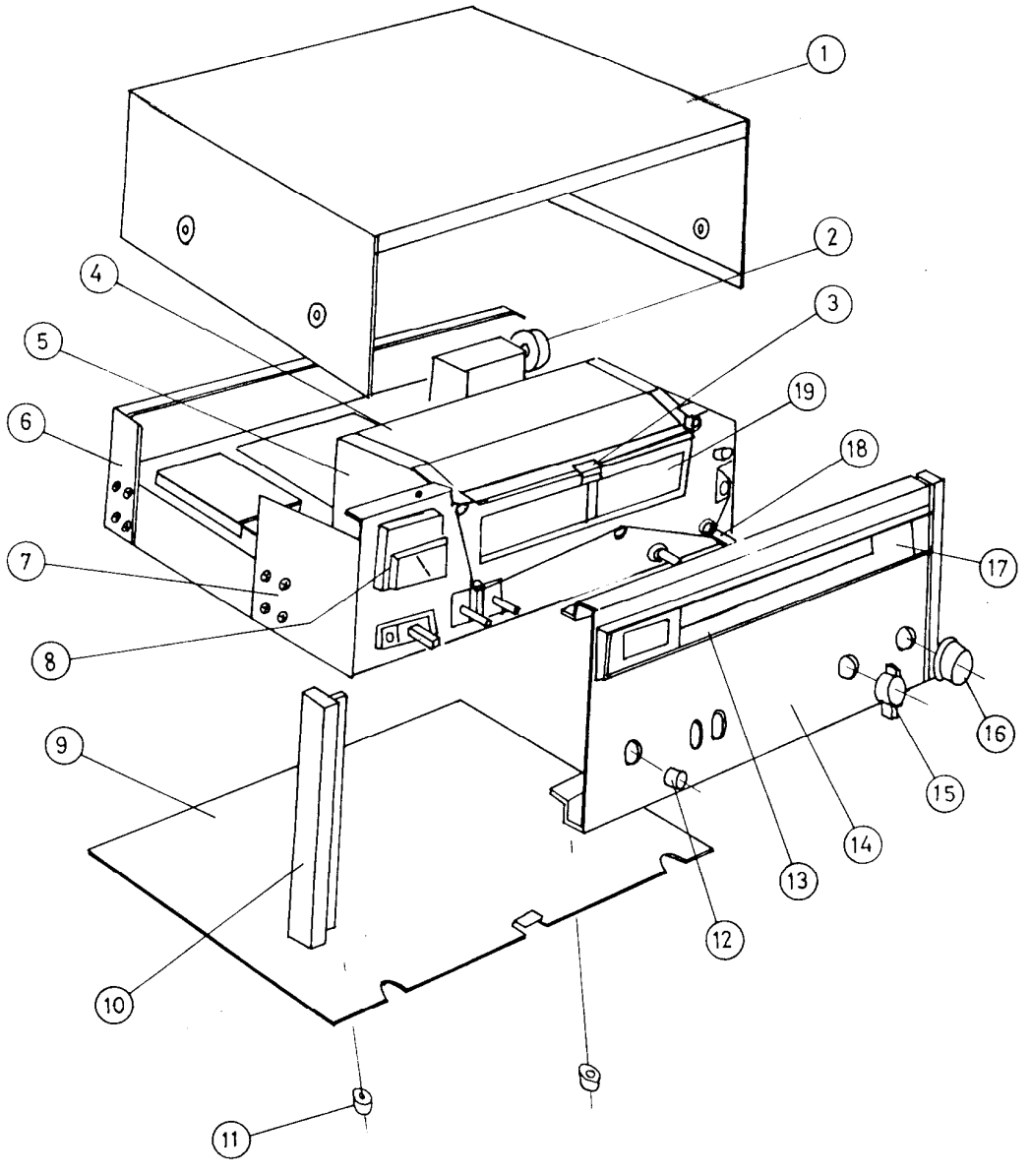
	FM	AM
Tuning Range:	88~108MHz	530~1605KHz
IHF Sensitivity:	1.7μV	15μV, 120μV/m(Bar Antenna)
Image Rejection Ratio:	90dB(98MHz)	70dB(1MHz)
IF Rejection Ratio:	100dB(98MHz)	70dB(1MHz)
Signal to Noise Ratio:	70dB(IHF)	45dB(Input 30% 1mV)
Spurious Response:	Better than 100dB	
Adjacent Channel Attenuation:	75dB	
AM Supression Ratio:	Better than 55dB	
Capture Ratio:	Less than 1.2dB	
Harmonic Distortion:	MONO less than 0.2% Less than 0.8%	
	ST less than 0.5%	
Frequency Response:	20~15,000Hz $^{+0}_{-0.5}$dB)	
FM Antenna Input Terminal:	300Ω, 75Ω	
Output:	0.75V Fix, 0~2V. Var(400Hz 100%) (FM)	
	0.2V Fix, 0~0.6V. Var(400Hz 30%) (AM)	

Output Impedance:	7KΩ(Fix) 1KΩ(Max. Variable)
Carrier Leak:	−70 dB
Stereo Separation:	Better than 40dB(400Hz),
	Better than 35dB(100~10,000Hz)
Transistor:	Transistor 34(1FET) Diode 31
Power Supply:	100/120/220/240V 50/60Hz 15W
Dimensions:	312Wx 345D x 146Hmm
Weight:	8kg

Attachment Circuits:

- FM Monaural/Stereo Automatic Selector
- FM Squelch (Muting)
- LPF(Low-pass Filter)
- SCA Filter
- Noise Filter
- Fix-Variable 2-System Output Terminal
- Tape Recorder Terminal(DIN)
- Minimum Distortion Tuning Indicator
- AM Bar Antenna
- FM 300Ω, 75Ω Input Terminal
- MPX AGC Circuit

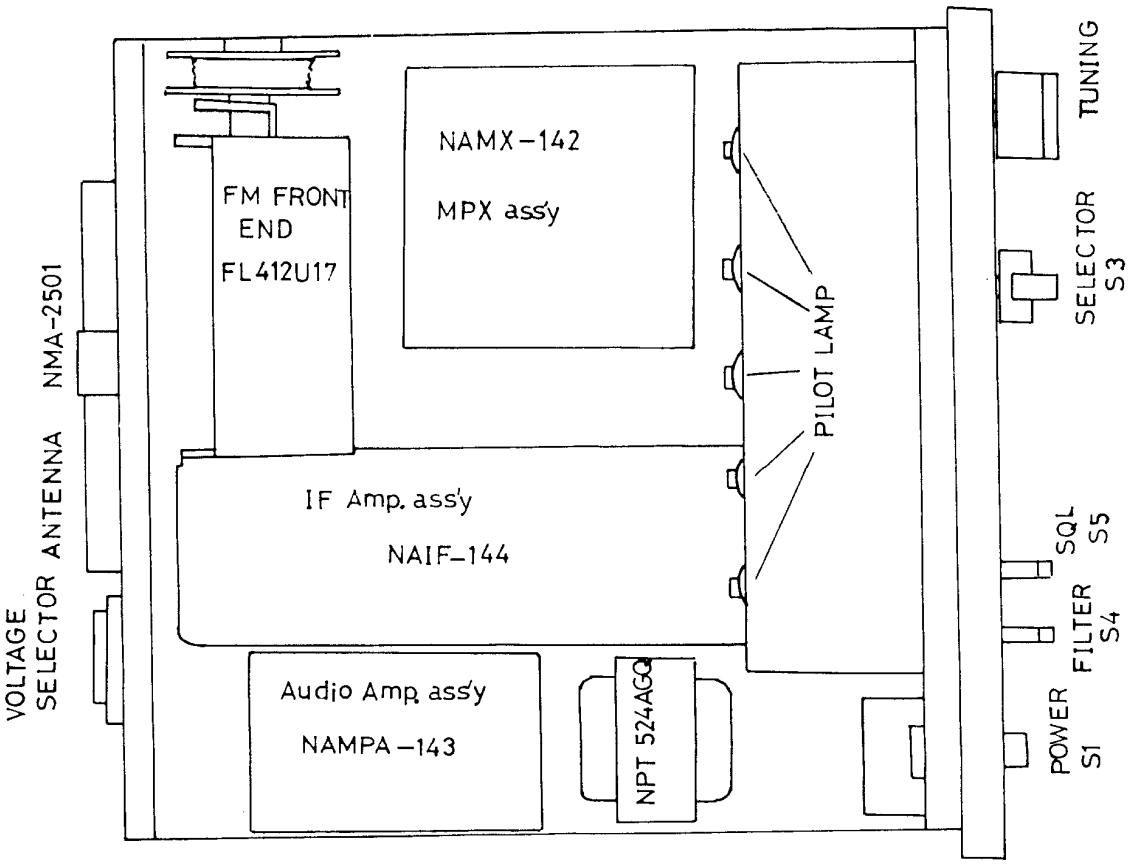
COMPONENT LOCATIONS



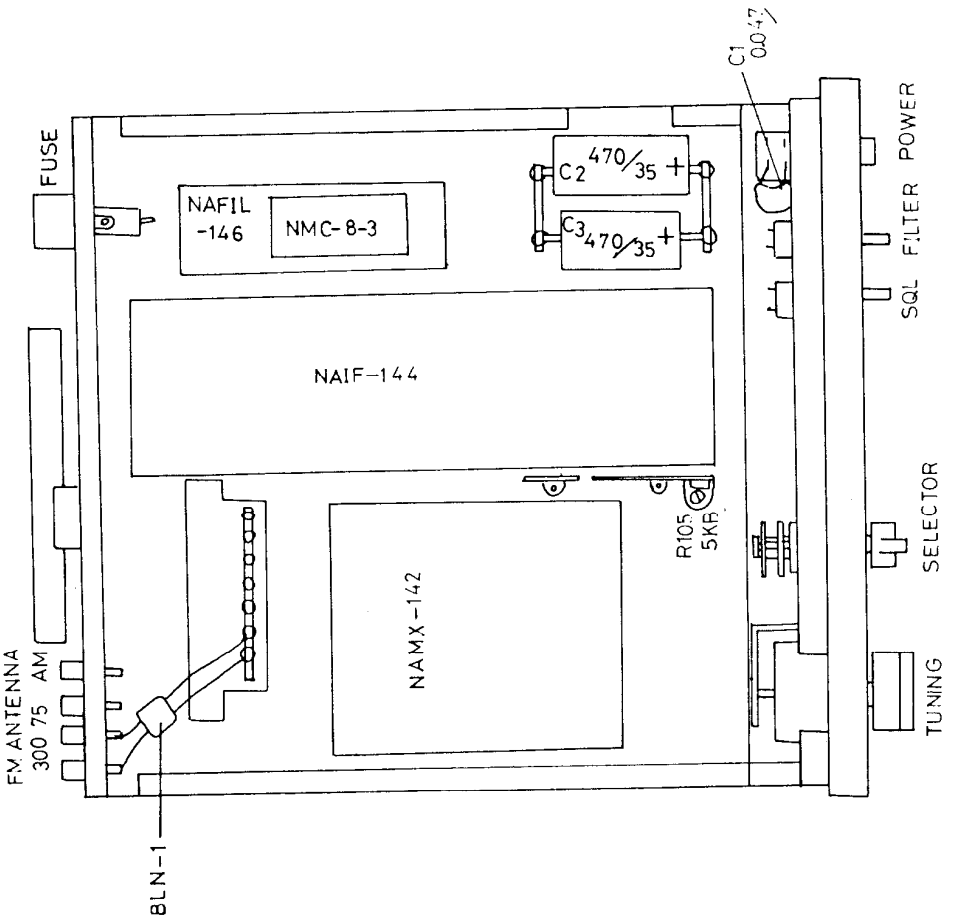
PARTS NO.	DESCRIPTION
1	Amp. Case
2	Dial Drum
3	Dial Pointer ass'y
4	Holder-Pilot Lamp
5	Pilot Lamp Holder Cover-Left
6	Rear Cover
7	Angle-Volume
8	Tuning Indicator
9	Bottom Cover
10	Side Decoration Right

PARTS NO.	DESCRIPTION
11	Rubber Cushion
12	Knob-Power
13	Decoration Frame
14	Front Pannel
15	Knob-Selector
16	Knob-Tuning
17	Transparent Plate
18	Tuning Shaft ass'y
19	Dial Plate

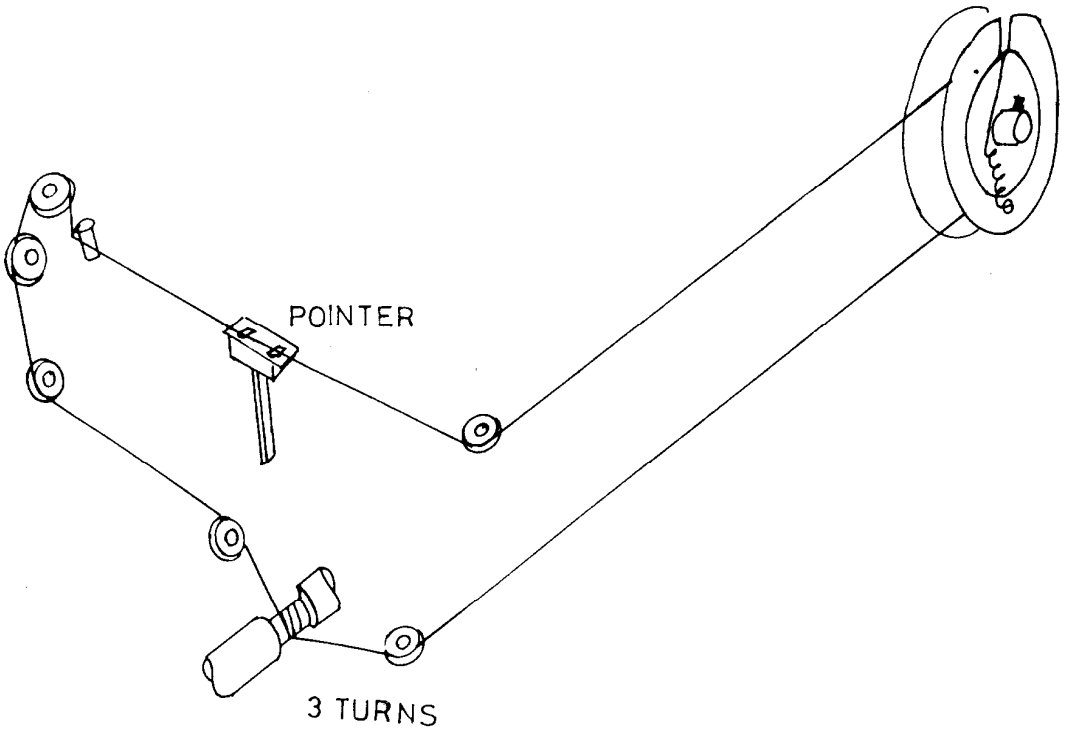
CHASSIS LAYOUT TOPVIEW



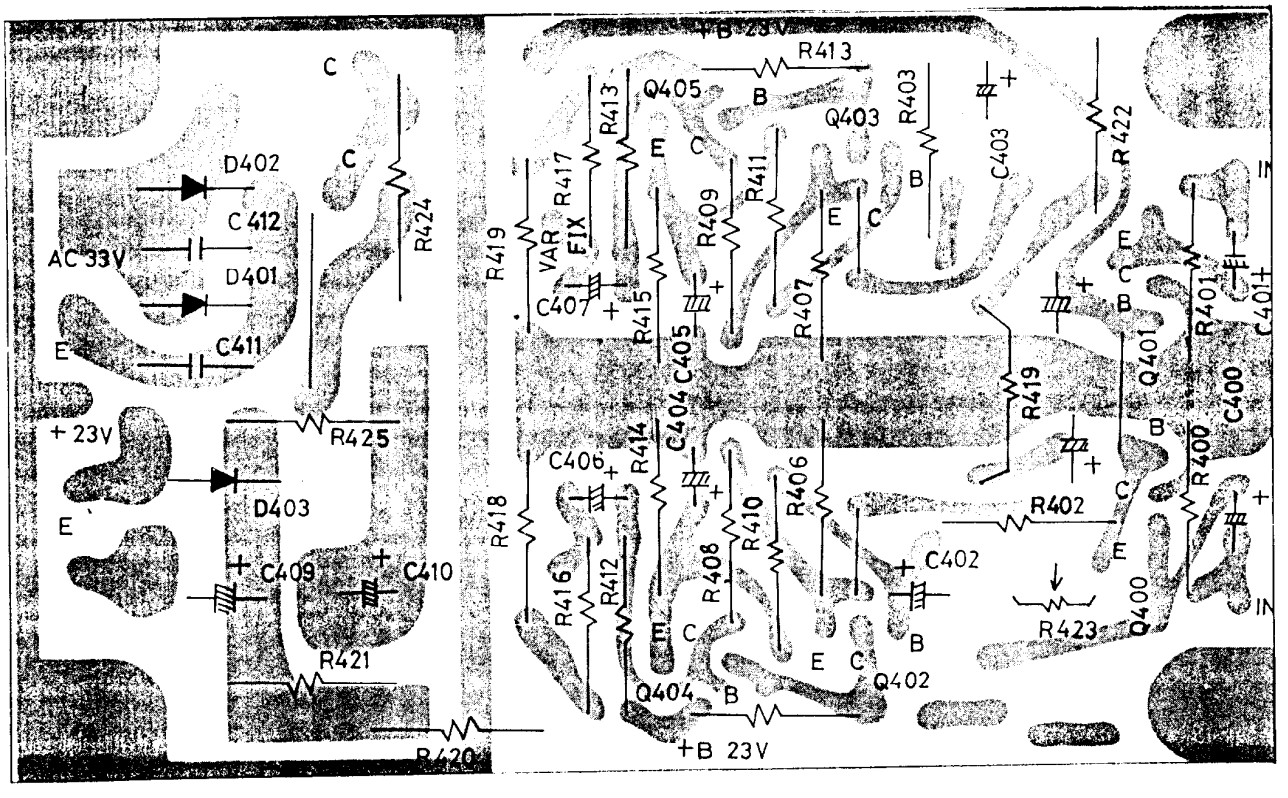
CHASSIS LAYOUT BOTTOM VIEW



DIAL CORD ARRANGEMIENT



NAMPA-143



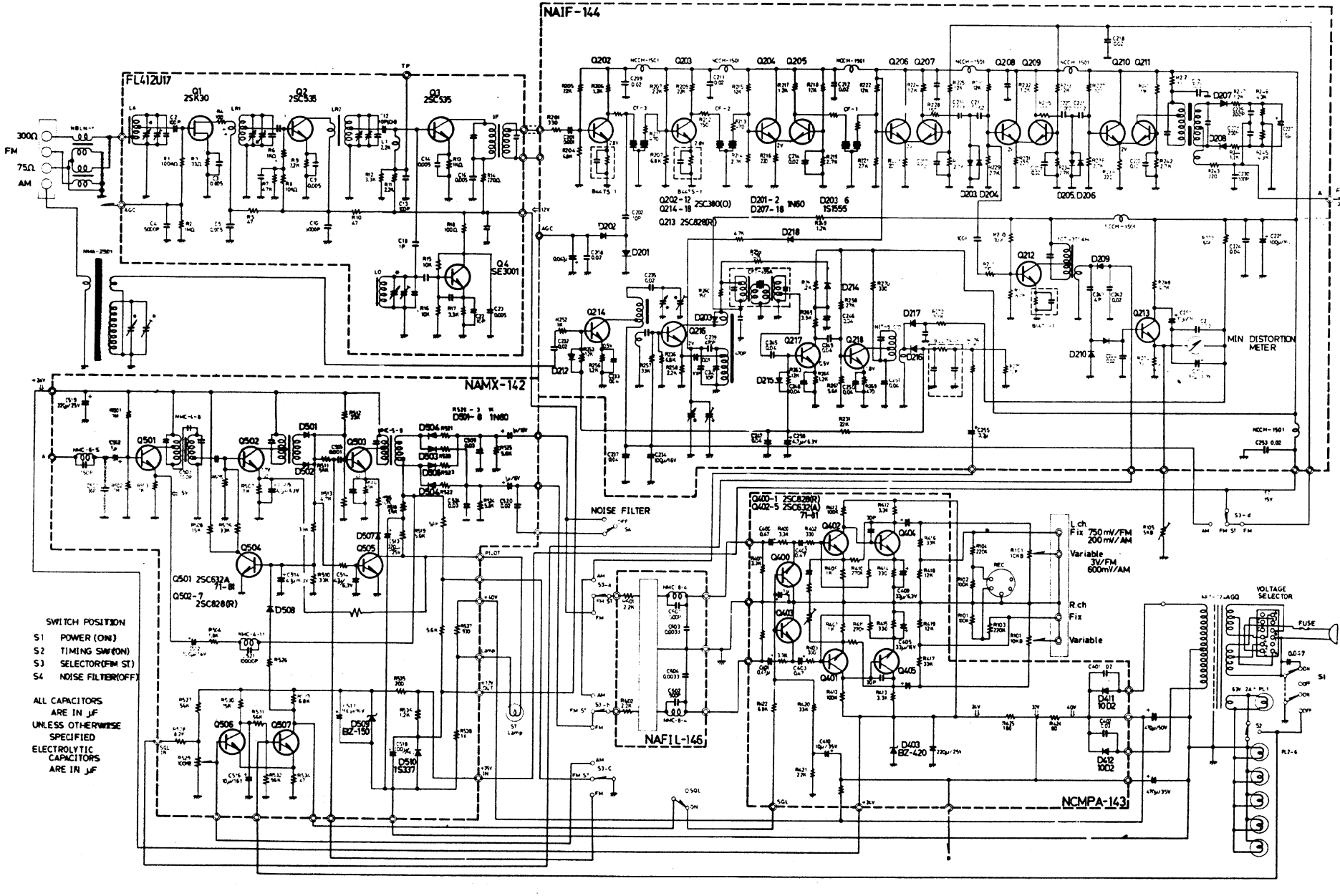
ALIGMENT PROCEDURE

INSTRUMENTS REQUIRED
1. AM and FM signal generator
2. AM and FM sweep generator
3. Vacuum tube voltmeter(VTVM)
4. Distortion meter
5. Stereo-Modulator

GENERAL ALIGMENT CONDITIONS
1. Signal input should be kept low as possible.
2. Standerd modulation is 400Hz 30%.

STEP	CONNECT SIGNAL SOURCE TO-	SET SIGNAL TO-	CONNECT OUTPUT INDICATOR TO-	SET RADIO DIAL TO-	ADJUST	ADJUST FOR	REMARKS	STEP
1	Set Radio Selector Switch for "AM"			Set SQL Switch for "OFF"				1
2	AM Sweep Generator to- AM Ant.	455KHz (Unmodulated)	Oscilloscope to- across TP-2	Quiet Point on Band	CFT-455A	Maximum Symmetrical response	Usually not necessary to adjust	2
3	AM Signal Generator to- AM Ant. through a standard radiating loop	515KHz (Modulated)	VTVM to- across Fix Terminal	Lower end	MO-1307	Maximum	Repeat 3 through 4 as necessary	3
4		1680KHz (Modulated)		Upper end	TC-103	Maximum		4
5	〃	600KHz (Modulated)	〃	600KHz (Tuned to Signal	NMA-2501	Maximum	Repeat 5 through 6 as necessary to obtain Maximum sensitivity on station	5
6		1400KHz (Modulated)		1400KHz (〃)	TC-101	Maximum		6
7	Set Radio Selector Switch for "FM"			Set SQL Switch for "OFF"				7
8	FM Sweep Generator to- Term "TP" on FM Tuner through a 50pF Capacitor Earth Side- RF Earth Point	10.15MHz Sweep Centered at 10.7MHz	Oscilloscope to- across TP-1	Quiet Point on Band	NIT-3503R Top Bottom	Maximum "S" Curve Lineality	Not necessary to adjust for Symmetrical response or Zero Voltage	8
9	FM Signal Generator to- across FM Terminal through a matching network	87.0MHz (100% Mod)	VTVM to-across Fix Terminal	Lower end	LO on FM Tuner	Maximum	Repeat 9 through 10 as necessary	9
10		109.0MHz (100% Mod)	〃	Upper end	TCH on FM Tuner	Maximum		10
11		90.0MHz (100% Mod)	〃	Tuned to Signal	LA LR1 LR2 on FM Tuner	Maximum	Repeat 11 through 12 as necessary	10
12		106.0MHz (100% Mod)	〃	〃	TCA TCR1 TCR2 on FM Tuner	Maximum		12
13		〃	〃	〃	IF on FM Tuner	Maximum		13
14	〃	98.0MHz (100% Mod. 1mV Input)	Distortion-meter to- across Output FIX Terminal	Tuned to Signal	NIT-3503R	Minimum Distortion		14
15		〃	Tuning-meter	〃	NIT-3504M	Maximum to swing most left		15
16	Set SQL Switch for "ON"							16
17	〃	〃	Oscilloscope to- across Fix Terminal	Tuned and Detuned to Signal	R-247	No noise when detuned but less effective for Signal Output when tund	Before Adjustment Confirm Squelching by turning anticlockwise fully.	17
18	Set Radio Selector Switch for "FM.ST"							18
19	〃	98.0MHz (1mV input) Pilot Sig. 19KHz 10%	VTVM to- across TP-4	Tuned to Signal	NMC-4-8 ×2 NMC-4-10	Maximum		19
20			VTVM to- across TP-5		NMC-5-9	Maximum		20
21	〃	〃 Pilot Sig. 19KHz 10% Main & Sub Sig. 1KHz 30% Composit (L ch only)	VTVM to- across OUTPUT FIX Term. (R ch)	〃	NMC-4-10 NMC-5-9 (NMC-4-8 ×2)	Minimum	Retouch slightly Repeat 21 through 22 as necessary	21
22		〃 (R ch only)	〃 (L ch)	〃	〃	Minimum		22

SCHEMATIC DIAGRAM



PARTS LIST

PARTS NO.	DESCRIPTION	SPECIFICATION	Q'TY
	ASSEMBLIES		
001	FM Front End	FL412U11	1
002	FM Amp. ass'y	NAIF-144	1
003	MPX ass'y	NAMX-142	1
004	Audio Amp. ass'y	NAMPA-143	1
005	Filter ass'y	NAFIL-146	1
	SEMICONDUCTORS, LAMPS		
101	Pilot Lamp	6.3V 0.25A	5
102	Pilot Lamp	6.3V 0.03A	1
103	Pilot Lamp	6.3V 0.3A	2
104	Silicon Diode	1S-351R	1
	TRANSFORMER, COIL		
201	Transformer-Power	NPT-524AGQ	1
202	Transformer-Baloon	NBLN-1	1
203	Coil-Antenna	NMA-2501	1
	CAPACITORS		
301	Electrolytic	EC 50V 470μF	1
302	Electrolytic	EC 35V 470μF	1
305	Line(UL)	UL 800V 0.01μF(M)	1
	RESISTORS		
401	Variable	16RG10KB20A	1
402	Semi Variable	R-HK5KB2S	1
	SWITCHES & TERMINALS		
601	Switch-Rotary	NRSM-263-30F-A	1
602	Switch-Power	NPS-122LN	1
603	Switch-Lever	SLS-3B	2
604	Socket-DIN		1
605	Socket-Pilot Lamp	PLS-G1	5
606	Socket-Pilot Lamp	FF-1S	1
607	Pin Jack	NTM-2PBL1-S	2
608	Pin Plug	SQ-4151	3
609	Pin Plug	SQ-4152	3
610	Terminal	NTM-4PUN1	1
612	Fuse Holder	SN-2052	1
613	Fuse	1A-T	3
614	Tuning Indicator	NIND-0200S12	1
617	Voltage Selector-Plug		1
618	Voltage Selector-Socket		1
619	Voltage Selector-Plate		1
624	Bushing-Antenna Lead	CG-8	1
626	Bushing-Pilot Lamp	CG-12	5

PARTS NO.	DESCRIPTION	SPECIFICATION	Q'TY
627	Lug-U Shape	ALG-1	2
632	Dial String	0.5 TDC	1
	CHASSIS, SCREWS, NUTS & ETC		
702	Rear Cover		1
704	Rating Plate		1
705	Antenna Stay		1
706	Holder-Antenna Coil		1
707	Dial Drum		1
708	Tuning Shaft Ass'y(W/Flywheel)		1
709	Drum Spring	SP-14A	1
710	Dial Hook		1
711	Pulley	DP-10B	1
712	Pulley Shaft	PSF-5R	2
713	Pulley Shaft	PSF-5S-N	3
714	Pulley Shaft	PSF-9.5S-N	1
715	Dial Plate		1
716	Dial Pointer ass'y		1
719	Angle-Volume		1
720	Holder-Pilot Lamp		1
721	Pointer Rail		1
722	Pilot Lamp Holder Cover-Right		1
723	PILOT Lamp Holder Cover-Left		1
724	Dial Plate Holder		4
725	Pilot Lamp Cover-Tuning Indicator		1
726	Spacer-Filter ass'y		1
727	Shield Soflan-Power Switch		1
728	Shield Panelon-Tuning Indicator		1
729	Shield Panelon-Pilot Lamp Holder		1
735	Screw-Pan Head	2.6P+4F(BRONZE)	2
740	Screw-Pan Head	3P+8F-N(BRONZE)	6
752	Washer-Fiber(black)		4
	CABINET		
801	Amp. Case		1
802	Front Panel		1
803	Bottom Cover		1
804	Side Decoration-Left		1
805	Side Decoration-Right		1
806	Decoration Frame		1
807	Transparent Plate		1
808	Knob-Tuning		1
809	Knob-Selector		1
810	Knob-Power		1
811	Shield Plate-Switch		2
812	Facet-Power		1

PARTS LIST

PARTS NO.	DESCRIPTION	SPECIFICATION	Q'TY
813	Rubber Cushion		4
814	Rubber Cushion Spacer		2
815	Knob-Output Volume		1
816	Holder-Decoration(side)		4
817	Washer-Spring(BRONZE)	SW-4	4
	NAIF-144		
002-101	Transistor	2SC380(O)	15
002-102	Transistor	2SC828(R)	1
002-103	Silicon Diode	1S1555	4
002-104	Germanium Diode	1N60NFM	13
002-201	Transformer-IF	NIT-3503R	1
002-202	Transformer-IF	NIT-3504M	1
002-203	Transformer-IF	NIT-5501D	1
002-204	Transformer-RF	NMRF-2502	1
002-205	Coil-OSC	MO-1307	1
002-206	Coil-Choke	NCCH-1501	7
002-207	Ceramic Filter	CFT-455A	1
002-208	Ceramic Filter	CF-10M-12	3
002-301	Capacitor-Electrolytic	EC 16V 100μF	2
002-316	CR Compound	B44TS-1	3
002-317	CR Compound	B44TF-1	1
	NAMX-142		
003-101	Transistor	2SC632A(71)or (81)	1
003-102	Transistor	2SC828(R)	6
003-103	Zener Diode	BZ-150	1
003-104	Zener Diode	1S-337	1
003-105	Germanium Diode	1N60NFM	8
003-201	Coil-MPX	NMC-4-8	2
003-202	Coil-MPX	NMC-4-10	1
003-203	Coil-MPX	NMC-5-9	1
003-204	Coil-MPX	NMC-6-5	1
003-205	Coil-MPX	NMC-4-11	1
003-301	Capacitor-Electrolytic	EC 25V 220μF	2
003-302	Capacitor-Electrolytic	EC 16V 100μF	3
003-401	Resistor-Semi Variable	R-HK100KB3S	1
003-402	Resistor-Oxide Film	RN 3L 930	1
003-403	Resistor-Oxide Film	RN 1L 1K	1
003-404	Resistor-Oxide Film	RN 3L 200	1
	NAMPA-143		

PARTS NO.	DESCRIPTION	SPECIFICATION	Q'TY
004-101	Transistor	2SC632A(71)or (81)	4
004-102	Transistor	2SC828(R)	2
004-103	Silicon Diode	10D2	2
004-104	Zener Diode	BZ-240	1
004-301	Capacitor-Electrolytic	EC 6.3V 100μF	1
	NAFIL-146		
005-201	Coil-MPX	NMC-8-3	1
005-202	Coil-MPX	NMC-8-4	2
	PRINTED CIRCUIT BOARD		
002-701	Printed Circuit Board	NCIF-144	1
003-701	Printed Circuit Board	NCMX-142	1
004-701	Printed Circuit Board	NCMPA-143	1
005-701	Printed Circuit Board	NCFIL-146	1